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THE MIMETIC ORIGIN AND DEVELOPMENT OF BIRD LANGUAGE.

BY SAMUEL N. RHOADS.

WHATELY, Archbishop of Dublin, remarked a half-century since,—“man is not the only animal that can make use of language to express what is passing in his mind and can understand, more or less, what is so expressed by another;” a remark which echoes with the increasing emphasis of another fifty years, the pious poet’s couplet—

“I shall not ask Jean Jacques Rousseau
Whether birds confabulate or no.”

Darwin thinks “the sounds uttered by birds offer in several respects the nearest analogy to language: for all the members of the same species utter the same instinctive cries expressive of their emotions, and all the kinds that have the power of singing, exert this power instinctively, but the actual song is learned from their parents or foster-parents.”

The longer this subject is critically considered, the more are we convinced that the communication of ideas by means of sound and gesture (language) is instinctive and common to all animals;—that it is a genetically transmitted faculty, quite independent, in its earliest manifestations, of experiential or empiric knowledge, and that laws, governing the development of

any one language, have an equal application to all the rest. It is quite generally conceded that the present status of human language is the result of slow developement or evolution from the innate, inarticulate and exclamatory utterances of our human progenitors.

We see apt illustration of this in the gesticulations and cries of the newly born of man, bird or beast; which cries, originating in the primal idea of want, are its natural, spontaneous expression, and, in consonance with the other faculties, develop through early life to maturity, furnishing, in the momentary individual life, a brief, actual epitome of the genesis of language through successive generations in the infinite past. Therefore in so far as he may have "no knowledge but a cry" man may account himself not only a little lower than the angels, but quite as low as the creatures over whom he has dominion. Thus far language is an instinct common to all, and, in nature, identical among all animals; a conclusion necessitating in us the sort of humility which nowadays leavens all progressive inquiry.

Of language, in its original and primitive exercise, such a view is tenable, but in its wider acceptation, as Horne Tooke remarks,—“language is an art, the developement of which is consonant with that of the mental faculties,” and it is reasonable to infer that while articulate language (speech) is peculiar to man, distinctly separating him, as Cuvier states, from other animals, “it is not the mere power of articulation that distinguishes man from the other animals, for as every one knows, parrots can talk, but it is his larger power of connecting definite sounds with definite ideas.”¹

It follows therefore, that the language of birds differs not in kind from that of man, though far removed therefrom in degree of perfection as an art. Allowing for the difference in mental capacity, betwixt man and the lower animals, the comparative attainments among men in the linguistic art exhibit disparities no greater than may daily be observed of birds *inter se*. As the singing of a thrush to the chatter of sparrows, so the solo

¹ Descent of Man. Vol. I., P. 53.

of a Patti to the hurly-burly of an Italian marketplace; or (extending parallels to tribal characters) if we compare the Fuegian or Caffric tongues with those of more enlightened races, the contrast, however startling, finds its equivalent in a comparison between oscine and non-oscline orders of birds.

Between the higher and lower oscines there exists the same gradation of vocal attainments as exhibited by the dialects of nations speaking a language derived from the same parent tongue, and Bechstein, pushing the analogy further, instances how slight geographic differences of song among members of the same species inhabiting widely separated districts, may be appositely compared to "provincial dialects" among speaking peoples.

The inference of Darwin, "that an instinctive tendency to acquire an art is not a peculiarity confined to man" receives daily confirmation in the life history of all the creatures. It is apparent not only in the language of birds, but also in the construction of their nests and in their methods of discovering and storing food.

The ratiocinative processes which distinguish artificial from natural or innate actions are unmistakably apparent in the musical performances of our higher oscine birds.

Among the North American Turdidæ are several species which habitually retire to more secluded portions of their forest haunt to rehearse, in critical undertone, difficult bars and passages of the favorite song, and it is demonstrably true that the older and more experienced of these vocalists surpass the younger by reason of their longer practice.

In this respect bird-language has developed into a fine art analogous to the attainment made in bird-architecture, as exemplified by the play-houses of the Bower Bird and two American wrens,¹ and in the ornate embellishment of their nests by the Trochilidæ and Vireonidæ.

Barrington, in his paper on the "Songs of Birds"² has well remarked that "that there is no better method of investigating

¹ *Troglodytes aedon* & *Cistothorus palustris*.

² Trans. Phil. Soc. 1776.

the human faculties than by a comparison with those of (other) animals," and *vice versa* the same will hold in an inquiry like the one now before us. In the evolution of language as in everything else, we may recognize the all-pervading unity of plan and purpose, the "one law, one element and one far-off divine event to which," not man alone, but "the whole creation moves." This granted, the wealth of all past philological research is at our disposal and by so much are we warned of quicksand hypotheses and set upon a theory of some endurance.

Perhaps the theory most generally accepted as accounting for the origin of human language, is the onomatopoetic or mimetic, coupled with that elaborated by Wedgwood,—the interjectional or exclamatory theory. Wedgwood's theory has more to do with the original and instinctive sounds which form the primitive utterances of the speaking animal, while the mimetic accounts for the subsequent development of language into an art. Leaving all discussion of the tenability of these in their application to human language, let us apply them to birds.

The most cursory study of the songs of our feathered favorites must lead every inquirer to believe them the result of initiation, and a more critical examination would demonstrate that not only does this apply to the transmission of song from one generation to another, but it may be held to account for the origin and development of all bird-language in the past.

Consonant with our proposition, we find among the least specialized of avian forms that language is limited to half audible hissing or choking sounds or even to life-long silence,—an attempt merely, with sure-attendant failure. In such, language has been doomed to perpetual infancy; development in this direction has done nothing, has nought to do with it; it is not this noise or that noise, but *a* noise they are trying to make. The primal death-birth of speech is the result. Except as a proof that language, out of the chaos of silence, had a beginning so dumbly weak and abortive, we here have nothing to do with it either. Next come such as have found a tongue; an

unruly, screaming or croaking member, 'tis true, yet a tangible something for us to hear and heed; its products tangible too, for there is some attempt at combination and modulation there for discriminating ears. And so, from Pygopodes ascending, we start with promises, attempt and failure to climb the vocal scale through Longipennes upward. I will classify a few of the better known species illustrating the mimetic development of bird language into three,—1. Mimics of sounds in animate nature exclusive of other bird-notes: 2. Mimics of sounds in inanimate nature: 3. Mimics of song and human language. In the first class are many, probably a majority, whose notes in greater or less degree are intentionally imitative of those of other birds, and, for sake of illustration, are not so significant as those which (unlike the Mocking-bird, Catbird and Carolina Wren etc.) are not intentional, but seemingly unconscious mimics of animate sounds produced in their immediate environment. The Mocking-bird, Catbird, Shrike and Jay are studied and artistic imitators of their feathered associates, indicating the perfection to which bird-language has developed as an art, but if we would seek examples of the primary, instinctive exercise of the mimetic faculty, the notes of the Prairie, Bluewing, and Yellow warbler, the Grasshopper warbler of Europe, the Yellow-wing and Savannah sparrow together with most of those of the Ardeidæ, Anatidæ, Rallidæ and of some of the better known Strigidæ and Falconidæ, afford a better illustration. The resemblance of the notes of many smaller birds to those of insects of contemporary habitat is very noticeable in the songs of the five first mentioned in the above list.

Each of these sings so like a grasshopper haunting its respective locality as to deceive the unpracticed ear, causing the careless observer to overlook them entirely.

Among the lower orders, this ornithic mimicry, owing to the less complicated and exclamatory nature of their language, is more easily studied. To receive forcible proof of this, let the reader adventure on an April evening's tramp along our river marshes. To most, the novelty of such an experience would lend just the necessary stimulus to imagination and when, after

having every sense of musical concord outraged by the vast callithumpian chorus, there should come, as there surely will, an echo of tenfold emphasis from overhead, eliciting now here, now there, the wierd password till all is hushed along the shore, —then, methinks, in sounds not sweet he could detect a direful harmony.

But the Qua bird's is as one among the many voices of the night which nearly concerns us. Of perhaps four species of frog which in the spring make such localities nightly jubilant, two, more especially, are as well "taken off," vocally speaking, by the Bittern and Green heron as they are in the more literal sense of the phrase. To the third it seems fair to assign the origin of all quacking and its corresponding modifications among the Anatidæ, while the fourth makes a sound so like the notes of a Sora Rail as to put one in doubt which is the best mimic. Turning over the pages of Nuttall's "Ornithology" at this moment, the following, relating to the morning cries of the yellow-breasted Rail seems opportune. "As soon as awake, they call out in an abrupt and cackling cry, 'kreck, 'krek, 'krek, 'krek, 'kuk 'k'kh, which note, apparently from the young was answered by the parent in a lower, soothing tone. The whole of these uncouth and guttural notes have no bad resemblance to the croaking of the tree-frog, as to sound."

To the student of shadows of things gone by, nocturnal sounds and scenes are a fitting environment. How to-day's dark guess gathers increasing light by this backward look into the infinite night of myriad yesterdays, where lie, in silent readiness, the unspoken but not unspeakable secrets of the past!

In considering the second class of bird-mimics,—viz., those which imitate sounds in inanimate nature, we approach nearer the question of the origin as distinguished from that of the development of their language. Aristotle goes to the root of the matter when he queries regarding the European Bittern's note,—"why do those which are called Bomugi, and which are fabulously reported to be bulls consecrated to some deity, usually dwell among marshes which are situate near rivers? Is

not such a sound produced when rivers inundate marshes or marshes overflow their boundaries and are either roughly checked in their impetuous course by the sea and thence send forth a rushing sound? Similar sounds are produced in caverns underground into which currents of water rush and dispel the air through small apertures."¹ According to both the Mosaic and Darwinian genesis we are to believe that this elemental turmoil and river rushing was a primal thing and precedent of reptilian life just as reptilian life preceded avian life; therefore the whole family "Bomugi" may have had their music second-hand, through batrachian ante-cessors, from wind and wave and chafed shore. If this be true of Bomugus, it is true of all, however shrouded now by the intricate processes of their evolution from such crude, unmusical beginnings to the higher minstrelsy of the present.

At risk of the imputation of having a too fertile imagination, I will separate the second class of sound mimics into two divisions,—viz: 1. Mimics of water sounds; 2. Mimics of wind sounds. The long and short-billed Marsh Wrens and the Winter Wren sing songs so in harmony with their aquatic surroundings that you must be attentive to separate them from the rippling, bubbling sounds of moving water which they affect, the songs of the former being as characteristic of a marsh-receding tide as the other is in its unison with the prattle of woodland rivulets. The same may be observed of the Dipper, Kingfisher, Aquatic Thrush, Blue-yellow-back Warbler, Seaside Finch, Swamp Sparrow and others of like predilections. Many years ago, when the subject began to claim my attention, I call to mind having nearly decided that the Swallows all sang improvisations of a single theme, the rapid clattering of their own mandibles. But on a later occasion, it having struck my fancy that I detected in the joyous little flight-song of a White-bellied Swallow coursing near by, a likeness to the dripping sound of water, I waited till its repetition and then asked my companion, a wide awake negro boy, if he heard "that bird"? "Why," said he, "was that a bird? I thought it was

¹ Aristotle, Problem II., 35.

rainin'." A showery April day had sufficed to complete the illusion.

For a long while, too, the shrieks and hootings of sundry owls continually suggested an unnameable likeness to other sounds in nature, but save that impossible original in the north window casements, none other presented itself to mind.

Then in hypothetic despair I bethought me of an empty porter bottle which once hoo-hooed and shrieked, to the wind responsive, from a high fence panel, till a wrathful storm made end of it.

With twofold thanks that the bottle was empty, I now am wont to picture how, ages ago, the mute, inarticulate Scops sat taking music lessons in his porter-bottle house, and how in piny solitudes remote, great Bubo tuned those bass-viol monotonies of his in full accord.

The mourning Dove is typical of a family whose voices are in symphonious keeping, with the sighing cedars and moaning pines of their choice. The same correspondence is noticeable in species which, like the Grouse, Vulture, Swan and other aquatic kinds are mute or nearly silent.

In contrast with the silent Vulture, content with silent victims, the nearly related Eagles and Hawks are a screaming, noisy set of birds which seem to have adopted for their own a quintessence of the dying utterances of their victims merely because of carnal policy and from no delight in language in itself considered.

However, the further consideration of this, more properly belongs to the last division of mimics, *i.e.* those which intentionally imitate the sounds produced by their contemporaries.

It were best, ere passing on, to allude to a few others of those birds whose notes resemble the sounds produced by the action of wind. The Broad-wing Hawk's love-notes are like the sound of high-whistling winds or the shrill creaking of interfering tree limbs, or may be imagined by another to be the exaggerated shrieking of a stricken hare or field-mouse. Possibly, yes, probably, all of these may have had combined influence.

The same previously noted of Doves, may apply to the "pewee" of the Flycatcher, the "yank yank" of Nuthatches, the scolding of our Vireos, parts of the song of many higher oscines, (Turdidæ and Icteridæ), and all songs of the more essentially whistling birds, or at least, such part of it as they have not acquired from the whistling Batrachia. Whistling, and its fife-like modulations was likely among the smaller thick-billed families, to be the natural outcome of the imitative faculty, limited in quality and variety by the peculiar structure of their mandibles, but the appearance of tenuiostrual forms enabled the more specialized vocalists to produce those more flexible, flute-like songs, which characterize them.

The third class division of mimics will include birds unmistakably imitators of their contemporaries in song,—mockers in the strict sense, and indebted to furred and feathered originals for the greater part. All in this class have a score of their own, a thread of original prose melody, lavishly embellished by poetic quotations from their favorite authors. By way of distinguishing these from the rest let us compare the Mocking-bird and Song-Sparrow. Each are songsters *par excellence* in their separate classes; each boast of a varied repertory, yet in the last, these variations are merely varietal combinations of the "sui, sibi, se or sésé" solus of ancestral Melospiza, and (*inter se*) differ only by numerical sequence of the syllables in a "four foot iambic," or by a change of accent or the addition of a final syllable, convert iambus to trochee and wind up with anapest flourish; whereas Mimus, multiplying his own wild originality by a hundred borrowed roots endlessly declines and conjugates, or with Pentecostal inspirations speaks all languages in one. From "yon trim Shakspeare on the tree," we pass again by exquisite minor gradations of the feathered genius, to sweet sparrow-rhymes and rhymesters many. Past Brown Thrush, Cat-Bird and White-eyed Vireo, by whom a sort of five minute rule has been set up in which each borrowed phrase is given impartial hearing, according to calendar, as if it were;—so on, by way of the Baltimore Oriole, Carolina Wren and others, which are not chronically mockers, but hold that talent

in heroic reserve for after-dinner speeches, we reach the notes of such as quickened the highly sensitive ear of a Nuttall or Burroughs by some vague likeness in them to other note of bird or beast,—chance utterances remotely suggestive of a first attempt at exercising the latent talent for mimicry.

But so nearly do these nice discriminations bring us to the mysterious borderland where fact and fiction intermingle, it were well to pause and confess our fallibility.

In his "Birds in the Bush," Mr. Torrey aptly remarks of a turn or grace-note, in the song of *Dendroeca virens*, which he was tempted to number among "the latest" of philological discoveries, that "perhaps after the lapse of ten-thousand years, more or less, the whole tribe of Black throated Greens will have adopted it, and then when some ornithologist chances to fall in with an old-fashioned specimen who still clings to the plain song as we commonly hear it, he will fancy that to be the very latest modern improvement and proceed forthwith to enlighten the scientific world with a description of the novelty."

Beyond what has been said of this native genius in feathers, I may not in present limits so enlarge as to notice that interesting subject, the influence of domestication and human training upon the language of birds, save to note that every experiment made with a view to solve the problem of its origin and development justifies the belief that bird language, as now existent, is, like human language, "the result of some operation of the imitative principle, quickened in all probability by circumstances which we are able to a certain extent to reconstruct, and aided at first very largely, but always in lessening measure, by the language of sign and gesture."¹

The joke of Prof. Schleicher, "If a pig were ever to say to me, 'I am a pig,' it would, *ipso facto*, cease to be a pig," while controverting the ultra Darwinian theory by its reference to the impassable language barrier, twixt man and the rest of the animal kingdom, nevertheless assumes a serious and questionable significance if the names of certain birds were substituted for the pigs.' Independently of the question of man's descent,

¹ See Philology; Appleton's Ency., New Ed.

however, the result of Darwin's life-long study of psychical and physical evolution receives wonderful confirmation in the family resemblance of notes peculiar to species whose genealogies, according to the development hypothesis, are tracable to the same ancestry. The Icteridæ form a group, the genera of which emphatically demonstrates this.

In the song of the Bobolink, a well known representative, he who runs may read a sure word of prophecy, proclaiming to the ear in its every emphasis, the same scientific facts as does his anatomy to the eye.

Who, that hears him say, in lusty May-song, "I'm a finch, I'm a finch, Icterus, Icterus, Quiscalus, Molothrus, Sturnella, one and all; as you'll see if you look at me, chee! Agelæus et cetera, all linked in me, a bobolink, bobolink, as you can see!"—dare contradict a word of it on biological grounds?

Not less confirmatory of this and of the theory of the mimetic origin of bird notes is the evidence given by species of widely separated generic characters which frequent the same sort of habitat and are subject during life to the same environing influences.

Some of these, as the Robin, Scarlet Tanager, Rose-breast Grosbeak and Baltimore Oriole, have song-notes in common, while the Woodcock, Night-Hawk and Snipe, have nearly the same squeaking call-note when associated together at night as frequently happens, thus indicating that their inspiration was derived from like natural sources, and that, in harmony with their limited vocal needs, it has remained content with squeaking. But, strange to relate, the members of this same trio have each made an attempt at something higher, and, (which is stranger than all) with nearly identical results. In the Goatsucker it is a hollow, booming sound, produced by its sudden downward descent during flight; in the Snipe and Woodcock it results from a whirring of wings during a slowly ascending and descending spiral flight. Such is the commonly accepted belief of observers of these manœuvres, and, if correct, they illustrate how, in the retarded organic development of any faculty, nature supplements it by mechanical ingenuity.

May we not in conclusion, fittingly adopt the words of a modern seer, with him agreeing that "between two opposing tendencies, one urging to variation, the other to permanence, (for nature herself is half radical, half conservative) the language of birds has grown from rude beginnings to its present beautiful diversity, and whoever lives a century of milleniums hence, will listen to music such as we in this day can only dream of. Inappreciably but ceaselessly the work goes on. Here and there is born a master singer, a feathered genius, and every generation makes it own addition to the glorious inheritance!"

A MONTH IN THE EASTERN PHILLIPINES.

BY J. B. STEERE.

WE spent the last days of March, 1888, at Cebu, in packing our collections from the Central islands. We were fortunate in finding an American vessel in port, sailing to Boston, and nearly loaded with sugar and manila hemp, and shipped home several cases of bird skins and other valuable and perishable collections by her, while the bulkier part, corals and sea shells, were left to be forwarded in the same way at a later date. We then took passage on the little Spanish steamer "Gravina," for Catbalogan on the island of Samar, the most eastern of the archipelago. The weather was of the ordinary Philippine kind, calm and with smooth seas. We left Cebu about noon, passed by the northern end of Bojol, and were then in sight of the mountains of Leite, and we spent the evening in coasting up the west shore of that island. The next morning when we waked up we were lying at anchor in front of the town of Catbalogan. We were started out of our berths a little sooner than common by an outcry among the Spanish passengers, and a call for the "Naturalistas Americanos." Hurrying into one of the passage ways, I found a Spanish military officer